CLAIMS

1.   An optical pick-up unit (1) for reading information from an optical information carrier (2), the unit comprising:

    a light source (10) for illuminating the information carrier (2);

    an optical system for injecting light reflected from the information carrier (2) into at least one vertical-cavity surface-emitting laser (17); and

    means (19) for detecting the spatial characteristics of the output from the or each vertical-cavity surface-emitting laser and to thereby generate error signals for the optical pick-up unit.

2.   An optical pick-up unit as claimed in claim 1, wherein said means (19) comprises a detector having at least two separate detection regions, and wherein the pick-up is arranged to generate a push-pull tracking-error signal by comparing the signals from said at least two separate detection regions.

3.   An optical pick-up unit as claimed in claim 1, wherein said means (19) comprises a four-quadrant detector, and wherein the pick-up is arranged to generate a focus-error signal by comparing the signals from the four quadrants of the detector.

4.   An optical pick-up unit as claimed in claim 1, wherein said means (19) comprises two semi-circular central detector regions and two rectangular outer detector regions and said light source (10) for illuminating the information carrier is a light source having circular symmetric output, and wherein the pick-up is arranged to generate a focus-error signal by comparing the signals from said detector regions.

5.   An optical pick-up unit as claimed in claim 1, comprising an array of vertical-cavity surface-emitting lasers, wherein said means (19) comprises a corresponding array of detectors each of which is arranged adjacent to a respective one of said lasers.

6.   An optical drive comprising a pick-up unit according to any one of the claims
1 to 5.

5   7.   A method of generating an error signal when reading information from an
optical information carrier, the method comprising the steps of:
        directing light onto the information carrier;
        injecting light reflected from the information carrier into at least one vertical-
cavity surface-emitting laser;
10   analyzing the spatial characteristics of the output from the or each vertical-
cavity surface-emitting laser; and
        generating an error signal based on the spatial characteristics of said output
from the or each vertical-cavity surface-emitting laser.

15   8.   An optical pick-up unit (1) for reading information from an optical
information carrier (2), the unit comprising:
        a light source (10) for illuminating the information carrier (2);
        an optical system for directing light reflected from the information carrier (2)
onto an array of vertical-cavity surface-emitting lasers (17); and
20   means (19) for determining the relative timing of switching for the lasers of
the array caused by the injection of light, and for generating error signals for the
optical pick-up unit based on said relative timing.

9.   An optical pick-up unit as claimed in claim 8, wherein said array is a two-by-
25   two array of lasers.

10.   An optical pick-up unit as claimed in claim 8 or 9, wherein the means (19) is
arranged to generate a focus-error signal by comparing the relative timing of at least
two adjacent lasers of the array.
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11.   An optical pick-up unit as claimed in claim 8 or 9, wherein the means (19) is
arranged to generate a push-pull tracking-error signal by comparing the relative
timing of at least two non-adjacent lasers of the array.

12.   An optical drive comprising a pick-up unit according to any one of the claims 8 to 11.

5   13.   A method of generating an error signal when reading information from an optical information carrier, the method comprising the steps of:

    directing light onto the information carrier;

    directing light reflected from the information carrier onto an array of vertical-cavity surface-emitting lasers to inject said reflected light into the laser of the array;

10   determining the relative timing of switching for the lasers of the array; and

    generating an error signal based on the determined relative timing.